

WHAT IS CLAIMED IS:

1. A cleaning device for cleaning a nozzle surface of an ink-jet head, comprising:

5 a first wiping member for wiping said nozzle surface;  
a cleaner lever for supporting said first wiping member;  
a lever driving mechanism moving said first wiping member between a retracted position located away from said nozzle surface and a wiping position for wiping said nozzle surface;

10 and

a flat plate form second wiping member formed of an elastic body arranged within a moving path of said first wiping member so as to contact with said first wiping member.

15 2. A cleaning device as set forth in claim 1, wherein said first wiping member is designed to move between said retracted position and said wiping position located above said retracted position, by moving a cleaner lever, and

20 said second wiping member is arranged above said retracted position and below said wiping position.

3. A cleaning device as set forth in claim 1, wherein said cleaner lever has a third wiping member which is able to contact with said second wiping member while said cleaner lever is  
25 moving.

4. A cleaning device as set forth in claim 1, further

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comprising:

a first supporting member supporting said second wiping member on the side of the retracted position of said first wiping member and,

5 a second supporting member supporting said second wiping member on the side of said wiping position of said first wiping member;

wherein a length of a portion of said second wiping member projecting from said first supporting member is shorter than  
10 a length of a portion of said second wiping member projecting from said second supporting member.

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5. A cleaning device as set forth in claim 1, wherein a tip end surface of said first wiping member comes in contact with  
15 a side surface of said second wiping member.

6. A cleaning device as set forth in claim 1, wherein said lever driving mechanism includes:

a rotary driving source;

20 a gear train to be driven by said rotary driving source;

a friction type clutch lever which is frictionally engaged with one of gears constituting said gear train by means of a predetermined biasing force and is arranged coaxially with said gear;

25 a first cam mechanism for converting rotation of said clutch lever into movement of said cleaner lever; and

a tooth portion formed on said clutch lever which engages

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with said gear train when said clutch lever is in a predetermined rotational angular range.

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7. A cleaning device as set forth in claim 6, wherein said  
5 tooth portion engages with said gear train when said first  
wiping member is being moved in a condition contacting with  
said second wiping member.

8. A cleaning device as set forth in claim 6, wherein said  
10 first cam mechanism includes a first cam follower formed in  
said cleaner lever, a first cam surface contacting with said  
first cam follower while said cleaner lever moves to said wiping  
position, and a second cam surface contacting with said first  
cam follower while said cleaner lever moves to said retracted  
15 position, and wherein said first and second cam surfaces are  
arranged at a predetermined angle with respect to each other.

9. A cleaning device as set forth in claim 6, further  
comprising a lock lever for locking said ink-jet head at a  
20 predetermined position, wherein

said lever driving mechanism includes a second cam  
mechanism for converting a rotational force of said rotary  
driving source into a driving force for moving said lock lever  
between a locking position for fixing said ink-jet head and  
25 an unlocking position away from said ink-jet head.

10. A cleaning device as set forth in claim 9, wherein said

first cam mechanism includes a first cam follower formed in  
said cleaner lever, said first cam follower following a first  
cam region for reciprocally moving said cleaner lever between  
said wiping position and said retracted position according to  
5 rotation of said clutch lever, and a second cam region for  
holding said cleaner lever at said retracted position even when  
said clutch lever is rotated, and

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said second cam mechanism includes a second cam follower  
formed in said lock lever, said second cam follower following  
10 a third cam region for reciprocally moving said lock lever  
between said locking position and said unlocking position  
according to rotation of said clutch lever, and a fourth cam  
region for holding said lock lever at said unlocking position  
even when said clutch lever is rotated.

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11. A cleaning device as set forth in claim 10, wherein while  
said first cam follower is operated in said first cam region,  
said second cam follower is in said fourth cam region, and when  
said first cam follower is moved into said second cam region,  
20 said second cam follower is shifted into operation in said third  
cam region.

12. A cleaning device as set forth in claim 10, wherein said  
second cam region is defined by an arc shaped cam groove centered  
25 at a rotational center of said clutch lever, and

said fourth cam region is defined by an arc shaped groove  
centered at rotational center of said clutch lever.

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13. A cleaning device as set forth in claim 9, further comprising an ink pump device for sucking ink from ink nozzles of said ink-jet head; wherein

5 said rotary driving source is a motor for driving said ink pump device.

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14. A cleaning device for cleaning a nozzle surface of an ink-jet head, comprising:

10 a first wiping member for wiping said nozzle surface;  
a cleaner lever for supporting said first wiping member;

and

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a lever driving mechanism moving said first wiping member between a retracted position located away from said nozzle surface and a wiping position for wiping said nozzle surface;  
15 wherein said lever driving mechanism includes:

a rotary driving source;

a gear train to be driven by said rotary driving source;

20 a friction type clutch lever which is frictionally engaged with one of gears constituting said gear train by means of a predetermined biasing force and is arranged coaxially with said gear;

cam mechanism converting rotation of said clutch lever into movement of said cleaner lever; and

25 a tooth portion formed on said clutch lever which engages with said gear train when said clutch lever is in a predetermined rotational angular range.

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15. A cleaning device as set forth in claim 14, wherein said cam mechanism includes a first cam follower formed in said cleaner lever, a first cam surface contacting with said first cam follower while said cleaner lever moves to said wiping position, and a second cam surface contacting with said first cam follower while said cleaner lever moves to said retracted position, and wherein said first and second cam surfaces are arranged at a predetermined angle with respect to each other.

10 16. A cleaning device as set forth in claim 14, wherein said cam mechanism includes a cam follower formed in said cleaner lever, said cam follower following a first cam region for reciprocally moving said cleaner lever between said wiping position and said retracted position according to rotation of said clutch lever, and a second cam region for holding said cleaner lever at said retracted position even when said clutch lever is rotated.

15 17. A cleaning device as set forth in claim 16, wherein said second cam region is defined by an arc shaped cam groove centered at a rotational center of said clutch lever.

20 18. A cleaning device for cleaning a nozzle surface of an ink-jet head, comprising:

25 a lock lever for locking said ink-jet head at a predetermined position; and,

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a gear train to be driven by said rotary driving source;

a friction type clutch lever which/is frictionally

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cam mechanism for converting rotation of said clutch

a tooth portion formed on said clutch lever which engages

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19. A cleaning device as set forth in claim 18, wherein

said cam mechanism includes a cam follower formed in said

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20. A cleaning device as set forth in claim 19, wherein

said fourth cam region is defined by an arc shaped groove

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5        a first wiping member for wiping said nozzle surface;  
a cleaner lever for supporting said first wiping member;  
a lock lever for locking said ink-jet head at a  
predetermined position; and

15        said lever driving mechanism includes:  
         a rotary driving source;  
         a gear train to be driven by said rotary driving source;  
         a friction type clutch lever which is frictionally  
engaged with one of gears constituting said gear train by means  
20        of a predetermined biasing force and is arranged coaxially with  
         said gear;

a second cam mechanism for converting rotation of said  
25 clutch lever into movement of said lock lever.

22. A cleaning device as set forth in claim 21, wherein said

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first cam mechanism includes a first cam follower formed in  
said cleaner lever, said first cam follower following a first  
cam region for reciprocally moving said cleaner lever between  
said wiping position and said retracted position according to  
rotation of said clutch lever, and a second cam region for  
holding said cleaner lever at said retracted position even when  
said clutch lever is rotated, and

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said second cam mechanism includes a second cam follower  
formed in said lock lever, said second cam follower following  
a third cam region for reciprocally moving said lock lever  
between said locking position and said unlocking position  
according to rotation of said clutch lever and a fourth cam  
region for holding said lock lever at said unlocking position  
even when said clutch lever is rotated.

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23. A cleaning device as set forth in claim 22, wherein while  
said first cam follower is operated in said first cam region,  
said second cam follower is in said fourth cam region, and when  
said first cam follower is moved into said second cam region,  
20 said second cam follower is shifted into operation in said third  
cam region.

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24. An ink-jet printer comprising:  
an ink-jet head;  
25 a cleaning device which is arranged offsetting from a  
printing region of said ink-jet head and is defined in any one  
of claims 1 to 23; and

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